GREE

GREE

Mini-Chiller

Installation and Operation Manual

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This Manual is applicable to following units:
HLR35SM/NaA-M HLR45SM/NaA-M

Note:

All the pictures in this manual are just schematic diagrams. The actual product is the standard.

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1. Usage Notice

Dear Users:

Thank you for choosing our Household (Townhouse) Central Air Conditioning Unit. Please read this manual carefully before installation, and conduct installation and usage by following the process instructed in this manual, so that you can comprehensively know and correctly use this unit.

Specially remind you the meaning of following label:

⚠ Warning! Means incorrect operation may cause injuries and deaths or badly hurt.

⚠ Notice! Means incorrect operation may cause injuries or property loss.

⚠ Warning!

When using this unit in winter, if outer ambient temp. is lower than 0℃, the temperature at where indoor unit is installed should be approach to outdoor ambient temperature; or if there is no people in the room for long-time, indoor temperature will approach to outer ambient temperature:

■ Add antifreeze in water system. Refer the actual outdoor ambient temperature for add proportion.

■ To cooling only unit, when it is not used in winter, drain out water in the unit and pipe to present pipe heat exchanger, pipeline and water pump from breaking; if it is not sure whether water in pipeline is drained clearly, do add antifreeze into the system pipeline. And all of these must be done by professional personnel.

■ Don't cut off power when unit is off, otherwise auto antifreeze operation protection will be ineffective.

⚠ Warning!

1. Please have the unit installed by authorized service center. For improper installation may cause water leakage, electric shock and fire etc.
2. Don't use or store flammable and explosive products near the unit.
3. Please cut off power supply immediately when malfunction (such as burning odor is smelled) occurs.
4. Don't insert finger or things into exhaust vent or air-in grille.
5. Don't turn on or cut off the unit by turn on or cut off the power supply.
6. Don't refit the unit. Please contact with dealer or professional installation personnel when it is going to repair or move the unit.

7. The appliance shall not be used for children without supervisor.
8. This product must not be disposed together with the domestic waste. This product has to be disposed at an authorized place for recycling

   of electrical and electronic appliances.
9. For appliances not accessible to the general public and which are intended to permanently connected to fixed wiring and which may have leakage currents exceeding 10 the installation instructions shall specify the rating of the residual current device (RCD) to installed.
10. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised that they do not play with the appliance.

Note!

1. Before installation, please check if the supply power is the same with that listed on nameplate, and check the safety of power. Done by professionals.
2. Before using, please check and confirm if wires and water pipes are connected correctly to present occurrence of water leakage, electric shock or fire etc.Make sure it must be done by professional of central air conditioning installation.
3. There must be earth wire at power supply to prevent electric shock. Don’t connect earth to gas pipe, water pipe, lightning rod or connection wire of telephone.
4. Don’t operate the unit with wet hand, and don’t allow children to operate the unit.
5. The On/off in Owner’s Manual is for the operation to “on and off” button of control panel for users; cut off power means to stop supplying power to the unit. Don’t directly expose the unit under the corrosive ambient with water or dampness.
6. Don’t directly expose the unit under the corrosive ambient with water or dampness.
7. Do conduct electric leakage detect after installation by professional of central air conditioning installation.
8. Operation conditions: Ambient outdoor temperature for heat pump operation must be from -15℃ to 28℃; At the same time, Ambient outdoor temperature range for cooling operation must be from 16℃ to 48℃；Furthermore, water temperature must be under 50℃.In order to avoid freezing the Tube-in-tube heater exchanger, water temperature must be beyond 5℃.
9. To be in compliance EN 61000-3-11,the product shall be connected only to a supply of the system impedance:|Zsys|=0.391 ohms or less.Before connect the product to public power network, please consult your local power supply authority to ensure the power network meet above requirement.

10. Electric supply tolerances: (380-415V)±10%, (50±1)Hz
11. Humidity range:30%-95%
12. Installation altitude: max 1000m
13. Transport/storage temperature range:-25℃-55℃. And for short period not exceeding 24h, the temperature is up to 70℃
14. Main switch provided by end user: main switch handle should be black or gray, it can be locked in "OFF" position with padlock.
15. The main disconnection device should be installed at a height of 0.6-1.7m. Over current protection is required(EN 60947-3,EN60947-2)
16. An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring

Please contact with local dealer, authorized service center or office, our company if malfunction occurs.

2. System Instruction

Mini-chiller Unit is a kind of small central air conditioning unit usually installed in high-grade flats, combination buildings, high-grade townhouse, and unitary office, restaurants, department stores, entertaining places and other places that have special air conditioning requirements.

Working principle of mini-chiller Unit: Firstly, the unit produces cooled (or heated) water, after being press by water pump, this cooled (heated) water will be transferred to every indoor fan coil by water pipe (or other terminal facilities), then through fan coil to conduct heat exchange with indoor air circle and make indoor air temperature lower (or higher), thus, indoor air conditioning can achieved. Meanwhile, fresh air unit can be installed in the system, lead certain quantity of fresh air in and blow it into rooms after filtering or lowering (or heating up) temperature, then the indoor air can still remain fresh and comfortable.

Mini-chiller System consists three parts: ① Household (Townhouse) Central Air Conditioning Unit: There are 2 types of cooling only and heat pump. Outdoor units are placed at outdoor balcony, roof or special flat roof; and indoor units can be placed in washing room or other indoor places. Outdoor and indoor units can also be piled together and places outdoors. ② Terminal facilities: It is usually fan coil, it is recommended to adopt horizontal type invisible fan coil under common circumstance, for it can be easily combined with indoor decoration, and will always produce satisfying effect; ③ Water system: For connecting host and terminal fan coil and work for transferring cool and heat. It is commonly made with galvanized pipe or seamless copper pipe, it can also adopt new type pipes such as PVC pipes, PPR pipes, or aluminum-plastic pipe etc..

3. Product Specifications

1. **Humanized design, both split installation and whole installation are available.**
2. **Ultra-thin indoor unit design, height is only 288mm, convenient for hanging.**
3. **Adopting junction box heat exchanger, unit performance, antifreeze ability and reliability can be enhanced greatly.**
4. **System realized trinity:**

   A set of heat pump system can both cool and heat, it saves gas system, and also collocate with household fireplace, water boiler or city heating net. Thus, cooling, heating, and water heating become trinity.

5. **Large range of cool water and heat water supply:**

   When cooling, supply range for cool water is 7℃～12℃; when heating, supply range for heat water is 45℃～50℃.

6. **High reliability:**

   Heat transfer media of this unit is water and with no distance limitation, only considering enough water pump lift can realize long-distance heating and cooling.

7. **Control function in subrooms:**

   It is available to conduct on or off control to host in rooms, that is, when order of turning on from only a single room, host on; when all rooms send unit off order, host off; general control spot can be set at living room to conduct prior control to unit.

8. **Easy operation:**

   Adopting advanced total computer control system, main control system can conduct complete control to the unit. Since it is very easy and quick to reset the operation, it can satisfy users' requirements. With multi-point control function, it is available to control on/off of host from several rooms, i.e. when order of unit on from only a single room, host on; when all rooms send unit off order, host off; general control spot can be set at living room to conduct prior control to unit.

9. **Easy dialogue interface:**

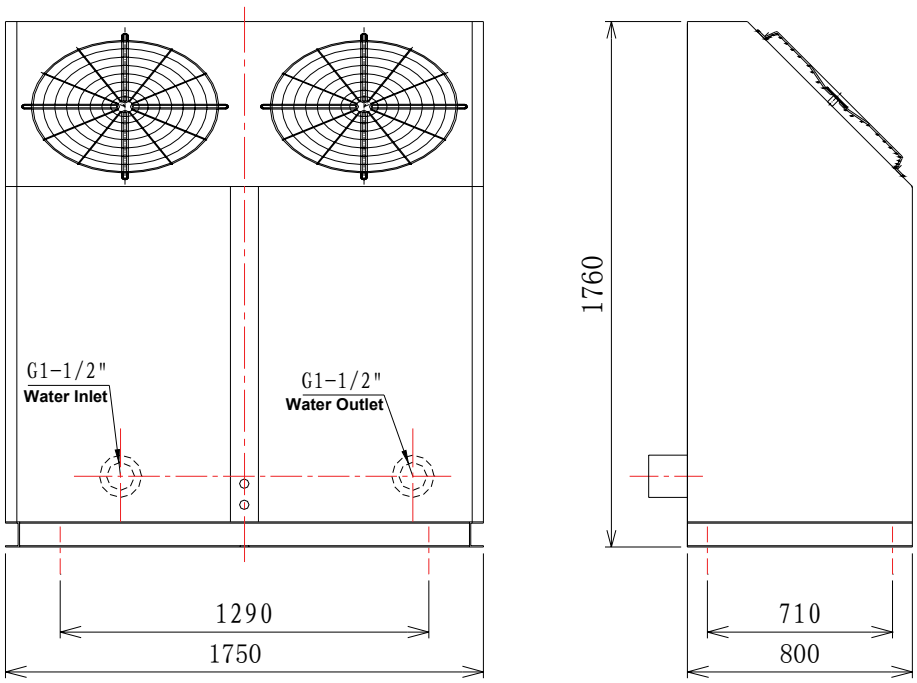
   Host displays in English, and every operation data can be find. When malfunction occur, unit will displays error informational automatically, thus, repair and maintenance is very easy.

4. Unit Introduction

1). Outline Sketch of Unit

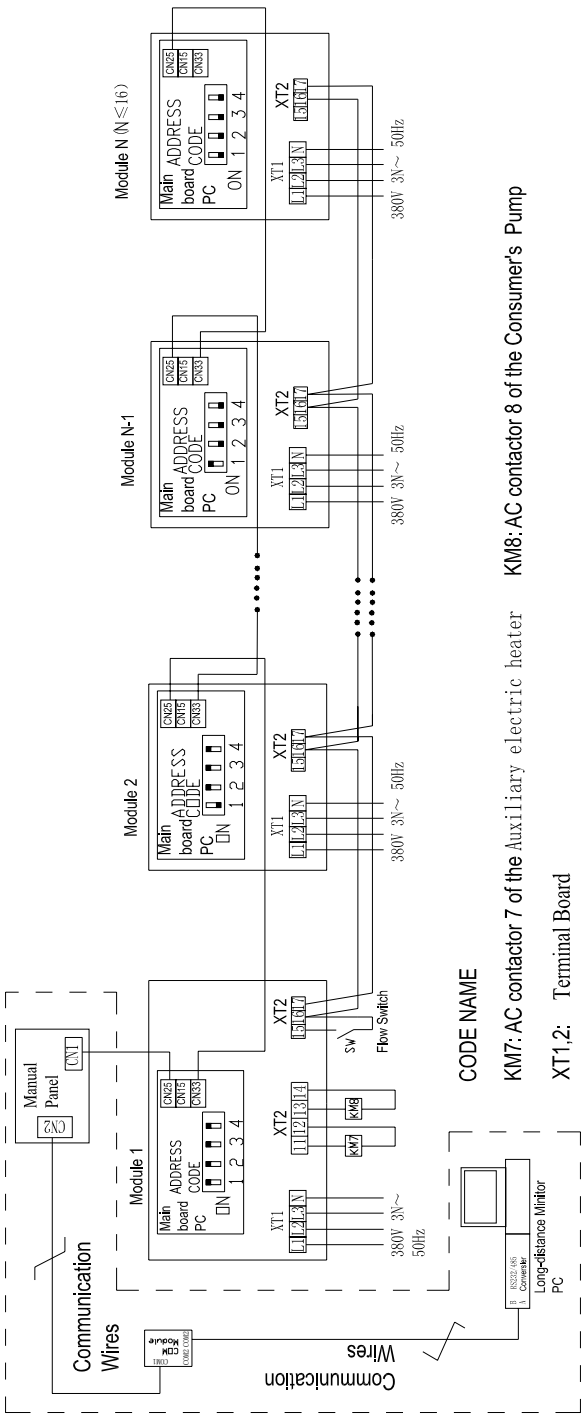
◇Outline dimension diagram of HLR35SM/NaA-M、HLR45SM/NaA-M：

Unit: mm



2). Outer Wiring Diagram of Unit

◆ Wiring Diagram of HLR35SM/NaA-M、HLR45SM/NaA-M



Notice:

1）、Auxiliary electric heater is optional part for heat pump unit.The diagram connected shown above.

2)、Use the 4-core communication wires to connect each module between CN33、CN25. Use a 3-core(2×1mm2) signal wires to connect the terminal 16,17 between each modules. Reference with the diagram shown above.

3)、Use a 3-core(2×1mm2)signal wires to connect the Water Flow Switch with the terminal 15,16 in one of the units.

4）.Use a 4-core(4×6mm2 ～16mm2) wires to connect each module terminal XT1 L1,L2,L3,N together.Reference with the diagram shown above.

◆ Selection of power supply wiring and air switch:

Model	Power supply type	air switch （A）	power supply cord
HLR45SM/NaA-M	3Ph	63	H07RN-F 5G10.0mm^2
HLR35SM/NaA-M	3Ph	50	H07RN-F 5G6.0mm^2

Note:

1.The power supply wire must be copper core wire, and the working temperature can not be higher than limited value.

2.If the length of power supply wire is longer than 15meters, do please increase the section area to avoid any accident due to over-load.

3. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.

4. The appliance shall be installed according to national regulations

5. When installing the connection wiring for manual controller, the wire must be put inside a separate protective sheath to avoid direct sunshine.

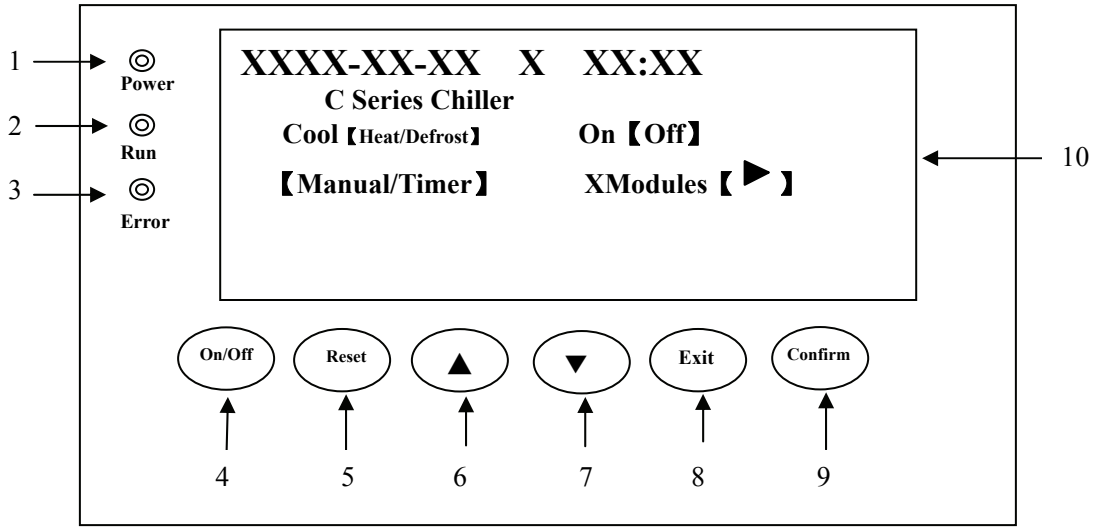
5 Operation Instructions of Controller

5.1 Overview on Wired Controller

In a 1～16 module network control system, only one Wired Controller is arranged for displaying the control menu, receiving and displaying parameters from the mainboard controller, setting adjustable parameters and transmitting set parameters to the mainboard controller.

This Wired Controller also be used in the other heat pump system，so some temperature points （such as Suction T1 , Suction T2 ,Throttle T1,Throttle T2 ）and EEV parameter is not used in this heat system;

5.2 Control Panel of the Wired Controller



1．**Power indicator（red）**: the indicator is on when the Wired Controller is powered on, or otherwise it is off.

2．**Run indicator(green):** the indicator is on when the Wired Controller is started, or otherwise it is off.

3．**Error indicator（red）**: The indicator is on when the unit is at fault, or otherwise it is off.

4．**On/Off button**: For controlling unit conversion between start and stop, press the button (for 3 seconds) in stop state to start the unit and press the button (for 3 seconds) in operation state to stop the unit.

5．**Reset button**: Press the button to clear fault and relieve the air discharge temperature sensor locking.

6．**Up selection button**: in menu selection, press the button to move the cursor upward or leftward; and in data modification mode, press the button to increase the value.

7．**Down selection button**: In menu selection, press the button to move the cursor

downward or rightward; and in data modification mode, press the button to decrease the value.

8. **Exit button**: Press the button to go back to the previous menu.

9. **Confirm button**: In menu selection, press the button to confirm the selected item; and in data modification mode, press the button to confirm the parameter and move the cursor.

10. **LCD**: Information display zone.

5.3 Wired Controller Operation Instructions

5.3.1. Turning on/off of the Unit

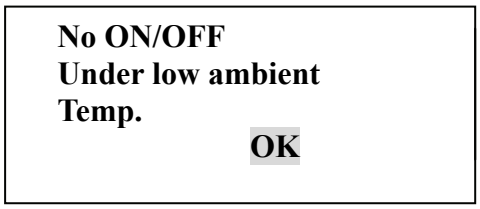
The unit under non-commissioning state can be turned on/off via the manual mode or the timing mode. The manual mode is given priority to the timing mode.

●Manual mode：

1）、Manual start: in the unit stop state, press the **on/off** button for 3 seconds and start the unit, and at that time the operation indicator is on. When the compressor begins to run after a delay, the manual starting process is finished.

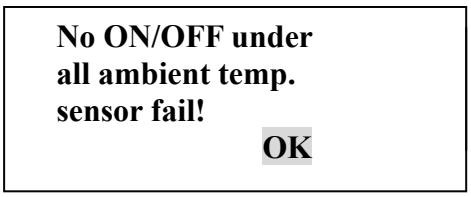
2）、Manual stop: in the unit operation state, press the **on/off** button for 3 seconds and stop the unit, and at that time the operation indicator is off. When the unit stops, the compressor immediately ceases and the cooling tower fan, the cooling pump and the chilled water pump are shut off. The manual stop process is finished.

When ambient temperature is lower than -16℃, pressing the start/stop button, the following prompt window comes up on the manual operator.



Press the **Confirm** button for acknowledgement.

If ambient temperature sensors of all linked units are at fault, pressing the on/off button, the following prompt window comes up on the manual operator.



Press the **Confirm** button for acknowledgement.

In the manual defrosting mode, pressing the on/off button, the following prompt window comes up on the manual operator.

Press the **Confirm** button for acknowledgement.

By pressing the **up selection** button or the **down selection** button, you can convert between **YES** and **NO**. Press the **Exit** to quit selection and go back to home page. When the unit is in the cooling & heat recovery mode stop state, if you select **YES** and press the **Confirm**, you can go back to the home page and the unit is in the heating & heat recovery operation state; and if you select **NO** and press the **Confirm**, you can go back to the home page and the unit is in the cooling & heat recovery operation state.

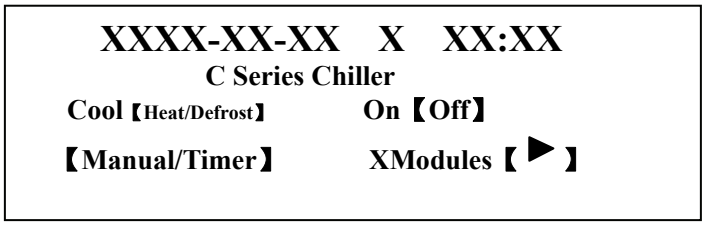
●Timing mode:

After the unit is energized or reset, press the **Manual Mode** to turn on/off the unit. Conversion between the manual mode and the timing mode is detailed in 5.3.2.2 **Main Menu**

5.3.2 Menu Operation Instructions

5.3.2.1 Home page

When the controller is powered on, the microcomputer will make a 3-second automatic detection and the LCD on the wired controller will display the following content.



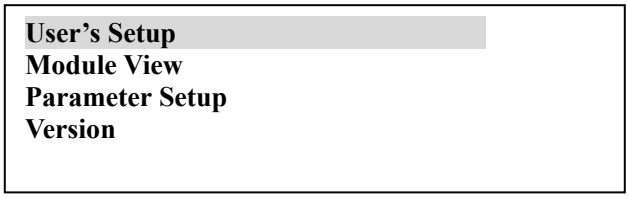
The content of **default home page menu** is dependent on system state. XX stands for year, month, day, hour and minute. Only one item or none is displayed in the"【】", representing the start/stop state of the system, starting method and quantity of linked modules. Presence of the ▶ at the end means the system is at fault.

After entering into a menu item, if no operation is made on the Wired Controller within 10 minutes, the system will automatically go back to the above **default home page menu (Home Page)**.

Press the **Exit** button on the wired controller at any time for enough times, you can go back the default home page menu as shown above.

5.3.2.2 Main Menu

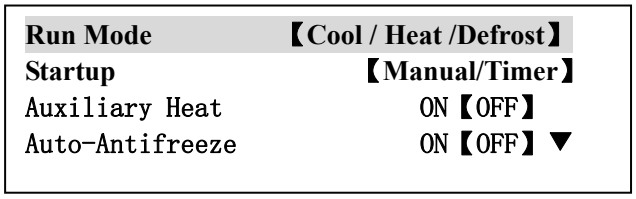
When home page is present on the screen as shown in the above drawing, press the **Confirm** to enter into the **Main Menu** and the following items is displayed on the screen.



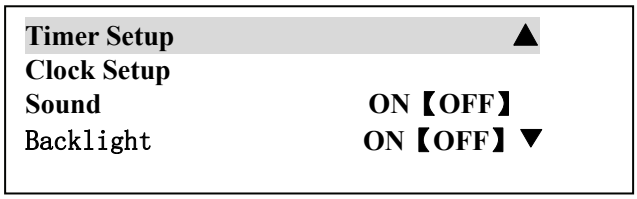
Press the **up or down selection button** to choose required function and press the **Confirm** button to go to the page. Only one item or none will be displayed in 【】 in the following graph. When a line or number is selected, it appears as white on black.

(1)、User's Setup

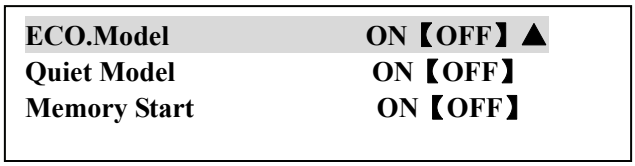
The following is basic settings most common for users. On the Main menu, select the **User's Setup** and press the **Confirm** to go to the sub-menu, as shown in the following drawing.



Page 1



Page 2



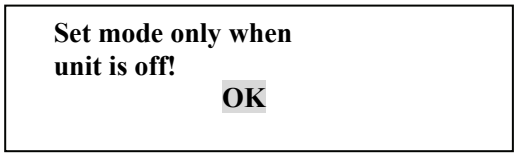
Page 3

Press the **Up or Down selection button** to choose a needed function and press the **Confirm** to go to or confirm the selection. The subsequent "**ON**" or "**OFF**", which means the function is selected or not.

a、**Run Mode Set**

Select the **Run Mode** and press the **Confirm** button, and the display on the screen is as follows:

Press the **Confirm** button to acknowledge a selected object, press the **Up or Down selection button** to change a selected object, and press the **Exit** button to cancel the model set. Different models have different display modes.If you is setting a mode in the startup state, the following prompt will appear:



Press the **Confirm** button for acknowledgement

b. Startup mode set

Select the **Startup** and press the **Confirm** button. The start/stop mode can be converted between the manual mode and the timing mode.

c. Auxiliary Heater Function Set

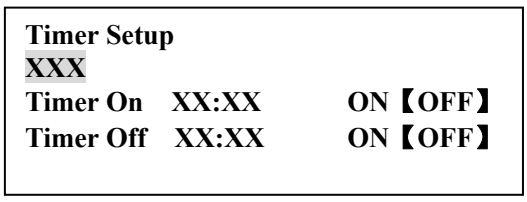
Select **Auxiliary Heat** and press the **Confirm** button, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not.

d. Auto-Antifreeze Protection Set

Select **Auto-Antifreeze**, press **Confirm**, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not.

e. Timer Setup

Select **Timer Setup** and press **Confirm** to go to the page as shown in the following drawing:



Press **Confirm** to change a selected object. Press **Up or Down** to change value or state of a selected object. This is timing on/off time and effective status each week. "**OFF**" represents the time set is invalid and "**ON**" means a valid time set. Press the **Exit** button to quit the page and go back to the previous menu and save set values.

f. **Clock Setup**

Select **Clock Setup** and press the **Confirm** button to go to the page. The following display is present on the screen.

Clock Setup
20XX-XX-XX
XX:XX
XXX

Press the **Confirm** button to change a selected object. Press the **Up or Down** button to change value or state of a selected object. Press the **Exit** button to quit the page and go back to the previous menu and save set values.

g. **Sound On set**

Select **Sound**, press the **Confirm** button, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not.

h. **Backlight On Set**

Select **Backlight**, press the **Confirm** button, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not.

I . **ECO.Model Set**

Select **ECO.Model** , press the **Confirm** button, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not.

J **Quiet Model Set**

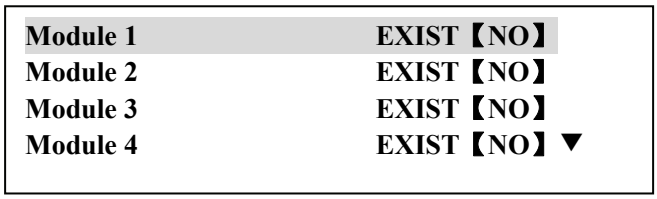
Select **Quiet Model** , press the **Confirm** button, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not.

K **Memory Start Set**

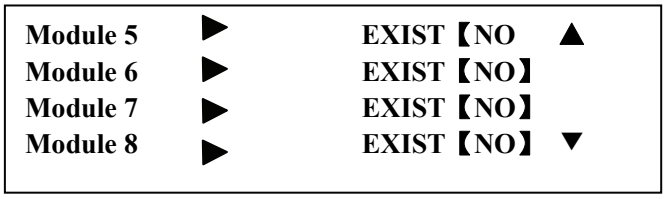
Select **Memory Start**, press the **Confirm** button, and the subsequent "**ON**" or "**OFF**", which means the function is selected or not. The function is for selecting whether the unit will memorize its operation state if power supply is shut down.

(2). Module View

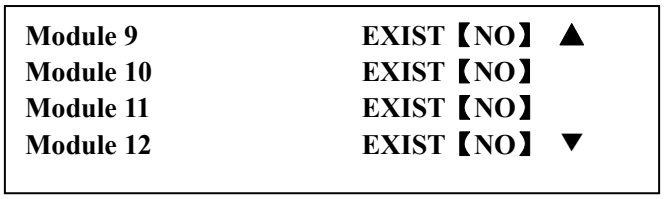
When the **Main Menu** is present on the screen, select **Module View**, press the **Confirm** to go to the pages as shown in the following drawing.



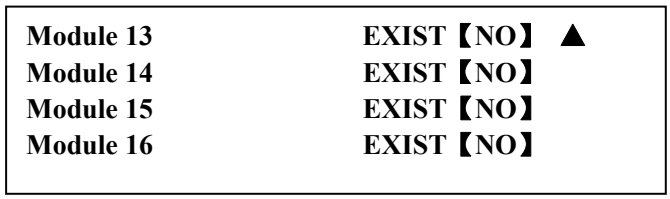
Page 1



Page 2



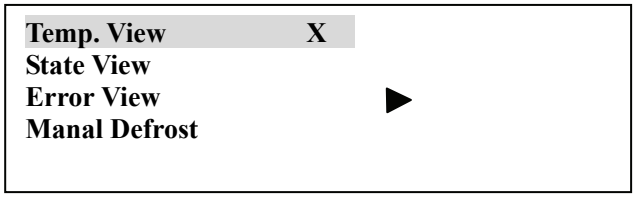
Page 3



Page 4

Press the **Exit** to quit the page and go back to the previous menu. Press the **Up or Down** button to select a needed module and press the **Confirm** button to go to corresponding page.

A module followed with "▶ "means having a failure. The following menu will display after going to the module.

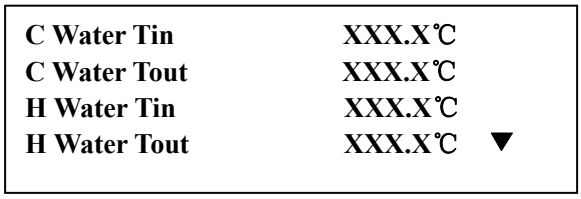


Press the **Exit** button to quit the page and go back to the previous menu. Press the **Up or Down** selection button to select a needed function and press the **Confirm** to go to corresponding page. "**X**"stands for one number of "1～16", meaning number of the selected module. The "▶ "following the **State View** represents the module provides auto freeze protection operation or defrosting operation. The "▶ "following the **Error**

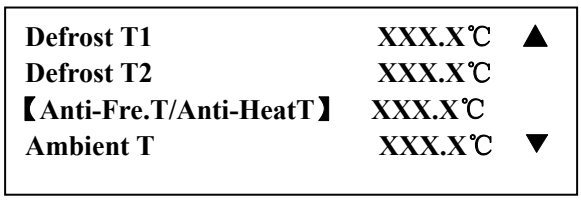
View represents the module is at fault.

a、**Temperature View**

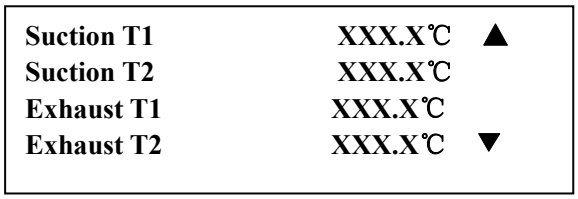
The function is for checking temperature at various temperature points. Select **Temp. View** and press the **Confirm** button to go to the pages as shown in the following drawings.



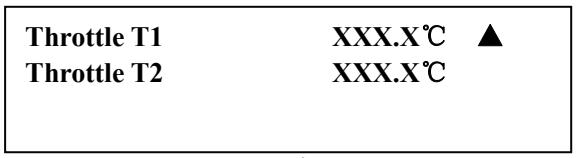
Page 1



Page 2



Page 3



Page 4

Press the **Up or Down** selection button to convert among the above four pages. Press the **Exit** button to quit the menu page and go back to the previous menu.

When **page 1** is present on the screen, press the **Reset** button and the **Exit** button simultaneously for 3 seconds, and **C Water Tin** and **H Water Tin**, as displayed previously, will be converted to **C Aver.Tin** and **H Aver.Tin**. And press again the **Reset** button and the **Exit** button simultaneously for 3 seconds, and **C Water Tin** and **H Water Tin** will be displayed again. As such, display can be converted between water inlet temperature and water inlet average temperature.

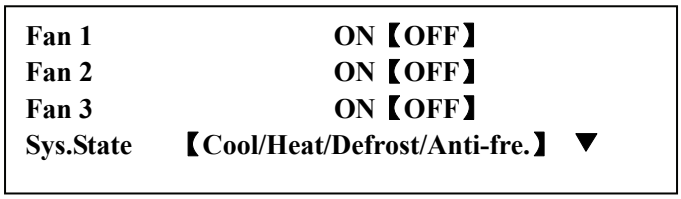
Only one item will be displayed in 【】 in **page 2**.When the run mode is cool or defrost, **【 Anti-Fre.T/Anti-HeatT 】** shows **Anti-Fre.T;** When the run mode is heat,

【Anti-Fre.T/Anti-HeatT】 shows **Anti-HeatT**.

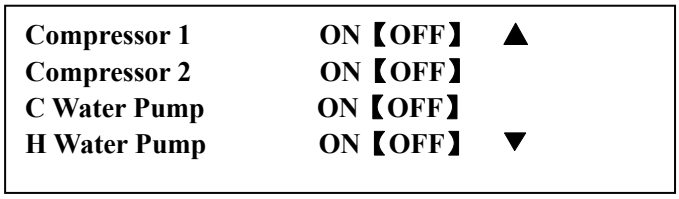
Note: above temperature display is dependent on unit model. If the temperature sensor is not existent for a certain model, "None" would be present on the display zone for corresponding temperature point.

b、**State View**

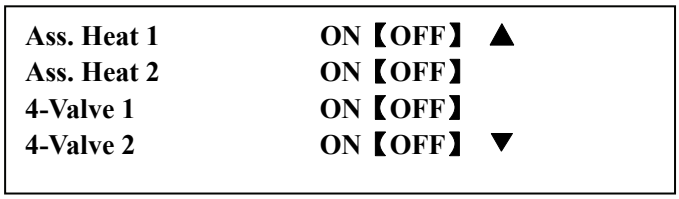
Used for checking the on/off status of motors. Select the **State View** and press the **Confirm** to go to the pages as shown in the following drawings.



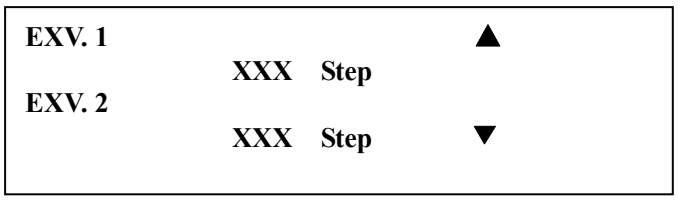
Page 1



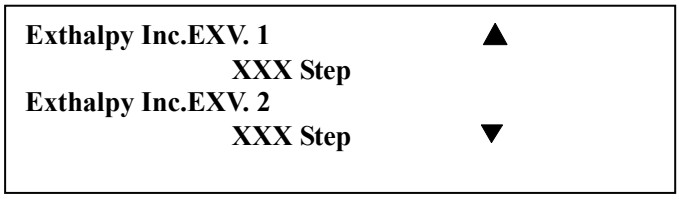
Page 2



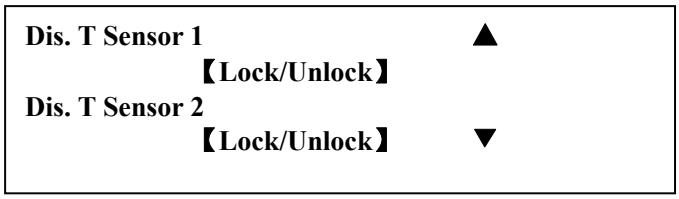
Page 3



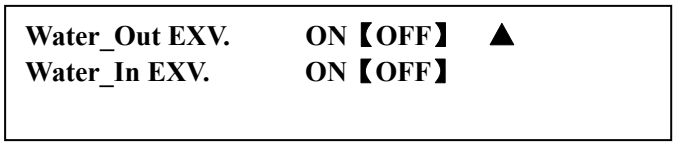
Page 4



Page 5



Page 6



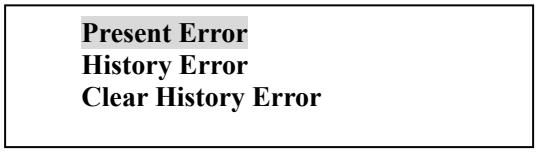
Page 7

Press the Up or Down selection button to convert among the above pages. Press the **Exit** button to quit the menu page and go back to the previous menu.

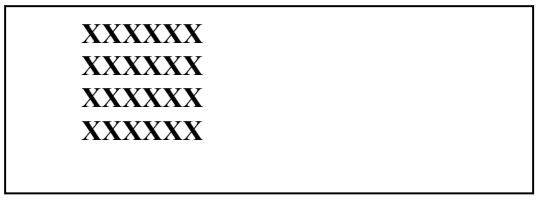
Note: above temperature display is dependent on unit model. If the temperature sensor is not existent for a certain model, "None" would be present on the display zone for corresponding temperature point.

c、**Error View**

Used for checking the failure status of the system. Select the **Error View** and press the **Confirm** to go to the pages as shown in the following drawings.



Press the **Exit** button to quit the page and go back to the previous menu. Press the **Up or Down** selection button to choose a needed module. When **Present Error** or **History Error** is selected, press the **Confirm** to go to the following interface.

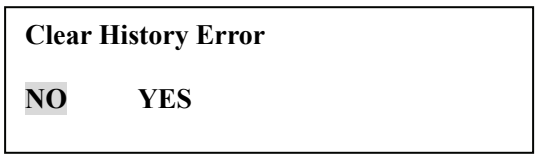


"**XXXXXX**"are possible failures as listed in the following:

Comp.1 HP Pro	**Dis T Sensor 2**
Comp.1 OverLoad Pro	**C Water-in Sensor**
Fan1 OverLoad Pro	**C Water-out sensor**
Sys.1 Dis.HighTemp.	**Anti-Frozen Sensor**
C Water Flow Switch	**Defrost T Sensor1**
Fan3 OverLoad Pro	**Defrost T Sensor2**
Jumper Error	**Ambient T Sensor**
Com.2 HP Pro	**Dis. T Sensor1**
Comp.2 OverLoad Pro	**Dis. T Sensor2**
Fan2 OverLoad Pro	**Thr. Valve1 Sensor**
Sys.2 Dis.HighTemp.	**Thr. Valve2 Sensor**
H Water Flow Switch	**Suction T Sensor1**
Comp.1 LP Pro	**Suction T Sensor2**
Comp.2 LP Pro	**LP Sensor1 Error**
User Anti_fire Pro	**LP Sensor2 Error**
Dis T Sensor 1	**H Water-in Sensor**
	H Water-out Sensor

If the last line on the menu is followed with a "▼", more failures are available below. You can press the **Down** selection button for reading more failures. If the first line is followed with a "▲", more failures are available above. You can press the **Up** selection button for reading more failures. Press the **Exit** button to go back to the previous menu. Only the lasted four failures are remained even if quantity of history failures is more than 4,

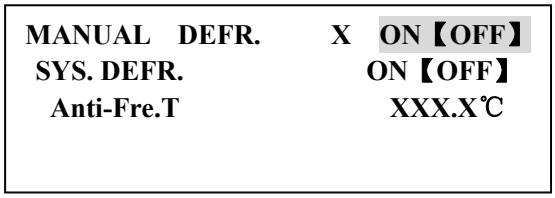
In Fig. 3.2.3.1, select **Clear History Error** and press the **Confirm** button to go to the following interface.



Press the **Up or Down** selection button to convert between **NO** and **YES**. Press **YES** to confirm and press **NO** to quit the menu and go back to the previous menu.

d. **Manual Defrost**

Used for starting or stopping manual defrosting. Select **Manal Defrost** and press **Confirm** to go to the following page.

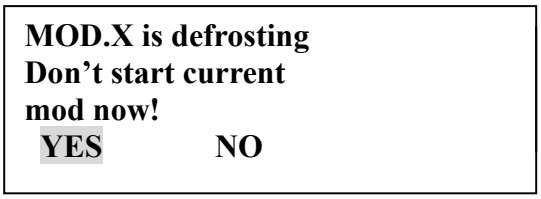


Press **Confirm** to start or stop manual defrost and press **Exit** to quit the interface and go

back to the previous menu.When manual defrost is on and the two systems do not stop defrosting completely, the following prompt will come up.

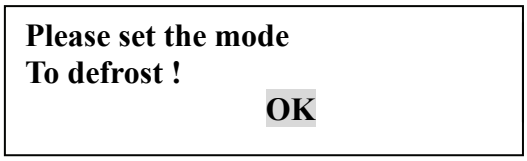
Press **Up or Down** button to convert between **YES** and **NO**, press Confirm for acknowledgement, press Exit to quit the menu and go back to the previous menu.

Note: manual defrost is not allowed for two modules simultaneously. If manual defrost is started for one module and such function is started for another module, the following prompt will appear:



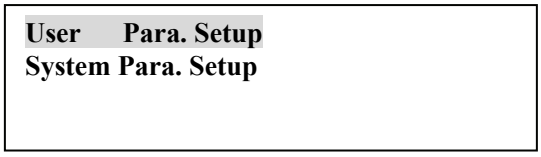
Press **YES** for acknowledgement.

If manual defrost is initiated for a certain module under non-manual defrost mode, the following prompt will be present:



(3) Parameter Setup

On the **Main Menu** on the screen, select **Parameter Setup** and press **Confirm** to go to the page as shown in the following drawing.



Press **Exit** to quit the page and go back to the previous menu. Press **Up or Down** selection button to select a needed setting interface.

a、**User-level Parameter Set**

Select the menu and confirm the selection for going to **User Para. Setup** menu. Press the **Up or Down** selection button to select the parameter to be modified and press **Confirm** to go to the modification page. Press the **Up or Down** selection button for

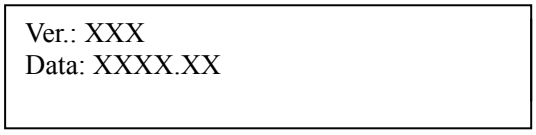
entering parameters and press **Confirm** or **Exit** to go back to the parameter set menu. Other parameters can be modified in the same way. After entered **Default Parameter** option, System will inquire whether use Default Value, if **YES** is choosed, then the parameters will be modified to Factory Default Value。After modification, press the **Up or Down** selection button to save parameter and quit the item. A prompt for asking whether to save the modification comes up again on the screen. Select Confirm to save it and go back to the Main menu. Please note that only in the above exit way can modifications be saved.

b、**System-level Parameter Set**

User shall not use the function unless under instruction of debug personnel if necessary, to prevent an accident. Code entry is essential for operating the function. Button points on how to operate: select the menu and confirm the selection, and a prompt of code entry appears on the screen; press the **Up and Down** selection buttons to enter correct password, press **Confirm** to confirm it, and go to **Parameter Set Menu**; press the **Up and Down** selection buttons to select parameters to be modified, press **Confirm** to go to modification interface, press the **Up and Down** selection buttons to enter parameter value, and press **Confirm** or **Exit** to go back to the **Parameter Set** menu; other parameters can be modified in the same way; After entered **Default Parameter** option, System will inquire whether use Default Value, if **YES** is choosed, then the parameters will be modified to Factory Default Value。after modification, press the **Up and Down** selection buttons to select **Save and Exit** item under the **Parameter Set** menu, and a prompt whether to save the modified values comes up again on the screen, and if you need to save them, you can select **OK** and then press **Confirm** to save modifications and go back to the Main menu. Please note that only in the above exit way can modifications be saved.

(4)、**Version Information**

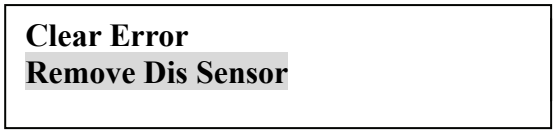
Used for checking version number of software and hardware of the wired controller. On the **Main menu** on the screen, select **Version** and press **Confirm** to go to the page as shown in the following drawing.



Press **Exit** to quit the page and go back to the previous menu.

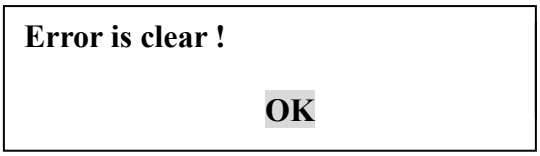
5.4. Reset (for erasing error)

On any interface, press **Reset**, the following page appears:



Press **Exit** to go back to the previous interface and press **Confirm** to select function as shown in the following:

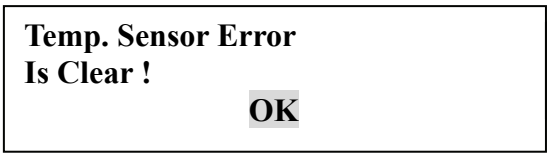
5.4.1 Erasing Error



Press **Confirm** to confirm it and go back to the previous page.

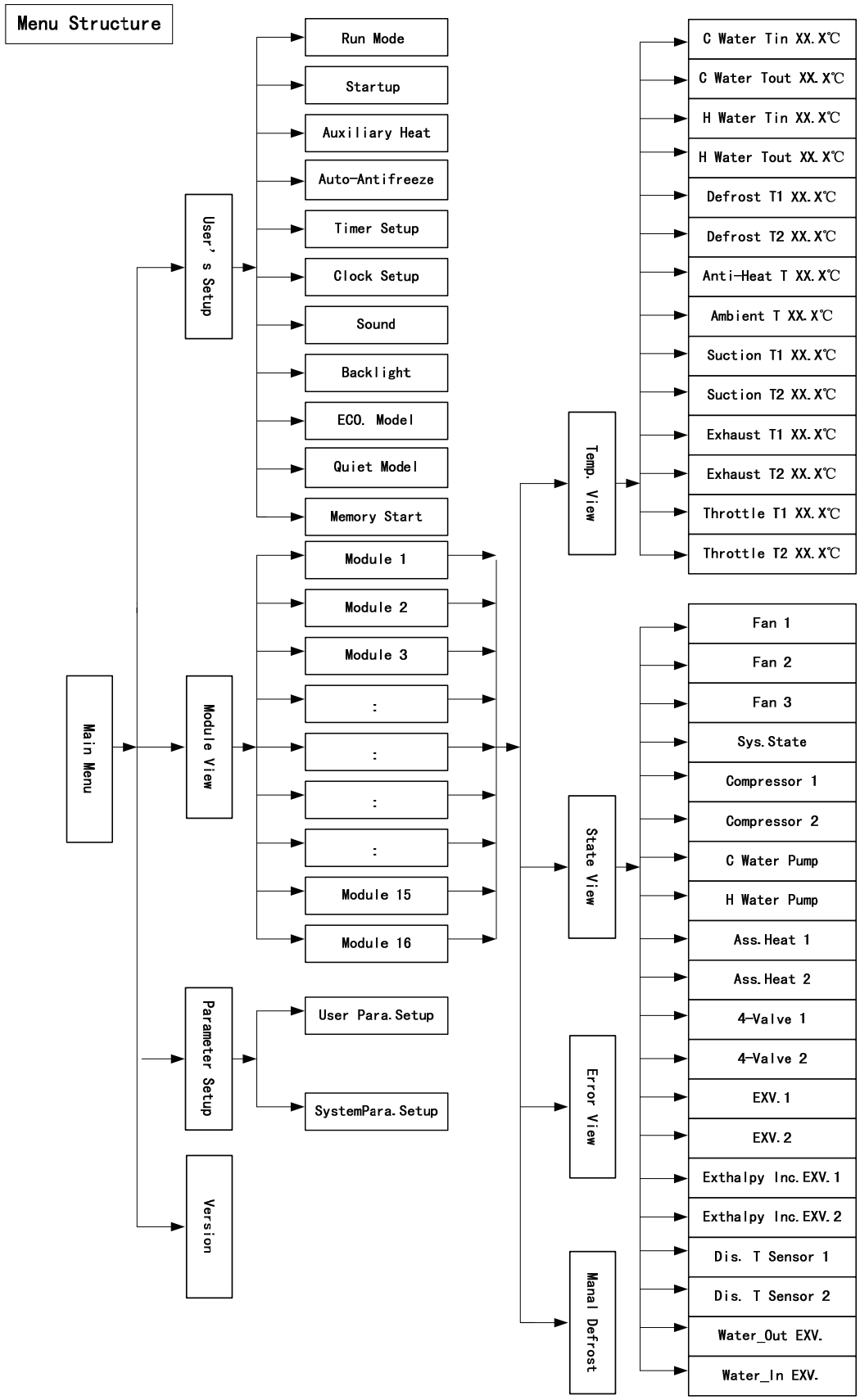
5.4.2 Relieve Discharge Temp. Sensor locking

Press **Confirm** to go to **Code Entry** page and enter correct password to go to the following page



Press **Confirm** to confirm it and go back to previous page.

5.5 Menu Structure



Menu Structure Explanation

Menu Structure	Explanation
User's Setup	Function setting
Run Mode	Running modes selection
Startup	Startup and stop selection
Auxiliary Heat	Auxiliary heat function selection
Auto-Antifreeze	Auto anti-freezing function selection
Timer setup	Timer setting
Clock Setup	Time setting
Sound	Buttons sound setting
Backlight	Backlight turn on setting
ECO. Model	Energy saving mode setting
Quiet Model	Quiet mode setting
Memory Start	Memory function setting when power on/off
Module View	Corresponding modular's parameters/status checking
Temp. View	Corresponding modular's temperatures checking
C Water Tin	Water inlet temperature checking
C Water Tout	Water outlet temperature checking
H Water Tin	Hot water inlet temperature checking
H Water Tout	Hot water outlet temperature checking
C AVER. Tout	Water inlet modular average temperature checking
H AVER. Tout	water inlet modular average temperature checking
Defrost T1	Defrosting temperaure 1 checking
Defrost T2	Defrosting temperaure 2 checking
Anti-Heat T	Anti-overheat temperature checking
Ambient T	Ambient temperature checking
Suction T1	Suction temperature 1 checking
Suction T2	Suction temperature 2 checking
Exhaust T1	Exhuast temperature 1 checking
Exhaust T2	Exhuast temperature 2 checking
Throttle T1	Throttle temperature 1 checking
Throttle T2	Throttle temperature 2 checking
State View	Corresponding modular status checking
Fan1	Fan motor 1 status checking
Fan2	Fan motor 2 status checking
Fan3	Fan motor 3 status checking
Sys.State	Units system status checking
Compressor1	Compressor 1 status checking
Compressor2	Compressor 2 status checking
C Water Pump	Water pump status checking
H Water Pump	Hot water water pump status checking
Ass. Heat 1	Auxiliary electic heating 1 status checking
Ass. Heat 2	Auxiliary electic heating 2 status checking
4-Valve 1	Four-way valve 1 status checking
4-Valve 2	Four-way valve 2 status checking
EXV. 1	Electric Expansion valve 1 number of steps checking
EXV. 2	Electric Expansion valve 2 number of steps checking
Exthalpy Inc EXV.1	Exthalpy electric expansion valve 1 number of stpes

	checking
Exthalpy Inc EXV.2	Exthalpy electric expansion valve 2 number of stpes checking
Dis. T Sensor 1	Exhaust sensor 1 status checking
Dis. T Sensor 2	Exhaust sensor 2 status checking
Water_Out EXV.	Water-out electromagnetic valve status checking
Water_In EXV.	Water-in electromagnetic valve status checking
Error View	Error checking
Comp.1 HP Pro	Compressor 1 high pressure protection
Comp.1OverLoad Pro	Compressor 1 over current protection
Fan1 OverLoad Pro	Fan motor 1 over current protection
Sys.1 Dis.HighTemp.	System 1 air exhaust high temp. protection
C Water Flow Switch	Water flow switch protection
Fan3 OverLoad Pro	Fan motor 3 over current protection
Jumper Error	Jumper error
Com.2 HP Pro	Compressor 2 high pressure protection
Comp.2 OverLoad Pro	Compressor 2 over current protection
Fan2 OverLoad Pro	Fan motor 2 over current protection
Sys.2 Dis.HighTemp.	System 2 exhaust high temperature protection
H Water Flow Switch	Hot water water flow switch
Comp.1 LP Pro	Compressor 1 low pressure protection
Comp.2 LP Pro	Compressor 2 low pressure protection
User Anti_fire Pro	User side anti-freezing protection
Dis T Sensor 1 Mal.	Exhaust sensor 1 fail
Dis T Sensor 2 Mal.	Exhaust sensor 2 fail
C Water-in Sensor	Water in sensor malfunction
C Water-out sensor	Water out sensor malfunction
Anti-Frozen Sensor	Anti-freezing sensor malfunction
Defrost T Sensor1	Defrosting sensor 1 malfunction
Defrost T Sensor2	Defrosting sensor 2 malfunction
Ambient T Sensor	Ambient sensor malfunction
Dis. T Sensor1	Air exhaust sensor 1 malfunction
Dis. T Sensor2	Air exhaust sensor 2 malfunction
Thr. Valve1 Sensor	Throttle valve 1 sensor malfunction
Thr. Valve2 Sensor	Throttle valve 2 sensor malfunction
Suction T Sensor1	Suction sensor 1 malfunction
Suction T Sensor2	Suction sensor 2 malfunction
LP Sensor1 Error	Low voltage sensor 1 malfunction
LP Sensor2 Error	Low voltage sensor 2 malfunction
H Water-in Sensor	Hot water in sensor malfunction
H Water-out Sensor	Hot water out sensor malfunction
Parameter Setup	Prarameters setting
User Para. Setup	Parameters setting for users
Cool T_in	Water inlet temperature setting
Heat T_in	Heating water inlet temperature setting
AH T_Start	Auxiliary Heat startup temperature setting
AH T_Stop	Auxiliary Heat stop temperature setting
H Water T_in	Hot water inlet temperature setting

System Para.Setup	System parameters setting
DEF.T_Start	Defrosting startup temperature
DEF.T_Stop	Defrosting stop temperature
DEF.Space	Defrosting interval
DEF.Time	Defrosting time
Anti-Freeze	Anti-freezing temperature
Anti-Heat	Anti-overheat temperature
Temp.Rate	Water inlet temperature change rate
Com.Space	Compressor interval

6. Daily Operation and Maintenance

When adjustment and test had completed, daily operation such as turn on/off unit, switch cooling and heating, and set parameter etc. are to be done through the manual control that installed indoor.

★ All safety protection settings in the unit are set well before outgoing, please don't modify them to avoid damaging the unit.

★ The on/off control to fan coil in every room should be operated individually by temp. controller and the 3-speed switch installed in every room. When there is no connect control between host and fan coil, after the last fan coil is turned off, host should stop.

★ Don't cut off power immediately after unit had stopped. If the unit stopped and disconnected to power supply for more than 2 days, please switch on the power supply for more than 6h before restart the unit. Otherwise, the unit may not be able to operate normally.

★ Don't put things on the unit or its accessories, keep all around dry, clean and well ventilation. Clean it on time by professional personnel when there is much dust on fin of condenser to prevent the dust from affecting the performance.

★ Don't block the air outlet and air intake vents of indoor fan coil, filter at air intake vent should be disassembled and cleaned regularly. (it shall be done by professional)

★ Do add antifreeze into water system of heat pump unit, the additional proportion is shown in this manual on page 26. Please let the professional to add the antifreeze. Please cut off the power supply before adding the antifreeze. For cooling only unit, when it is not used in winter, do drain out all water in the unit and pipeline to prevent the tube-in-tube heat exchanger, pipes and pump from breaking; when it is not sure water in pipeline had drained completely, do add antifreeze into system pipeline. Don't cut off power supply when turn off the unit, otherwise auto antifreeze operation protection will be useless.

★ To heat pump unit, if not for use for a long time, water in the pipeline will be the same temperature as ambient water. In that case, cool air may blow out in winter when unit begins to operate in heating mode. If there is no connected control system between host and fan coil, it is better to turn on host 5~10min before turning on the unit for

heating, then turn on indoor fan coil to heating mode directly after water in pipeline become warmer; if there is connected control between host and fan coil, turn on a fan coil first and turn on host for 5~10min, then turn on the fan coil in room that needs heating after water in pipeline become warmer. These can prevent cool wind from blowing out in the first few minutes when fan coil is just turned on.

7. Common Malfunction and Solution

When there is problem occur during operation, please contact with our nearest local dealer or office.

The following phenomena are not malfunctions:

1. When cooling (heating in winter), load is small (i.e. little fan coils operate), temperature of system water is lowered (raising) rapidly, antifreeze (anti high-temp) protection will work and will stop when water temperature back to set point.

2. When heating, since the surface temperature of heat exchanger is lower than outer ambient temperature, and when surface temperature of heat exchanger lower than 0℃, there will be frost on the surface and affect heat exchanging effect, thus the control system would conduct defrost regularly to melt the frost on the surface of heat exchanger.

3. If unit is used at area where temperature at winter will below 0℃, when system is in waiting state (don't cut off power), and when ambient temp. and system water temp. are about 0℃, in order to prevent water system from freezing and damaging equipments, control system will conduct auto antifreeze operation, start water pump and compressor until water temperature reach safe point.

When dealing with problems, professional personnel can remove malfunctions according to following list:

Common error	Reason	Solution (done by professionals)
1. Compressor doesn't work.	A、Error on power B、Wire loose C、 Error on relay or insurance D、 Temp. is set too high E、Error on compressor	●Check and re-tighten ●Check error reason and repair ●Reset ●Change compressor
2. Fan noise is large	A、Fan fixing bolts are loose B、Fan louver touched outer case or net cover C、Operation of fan is not steady	●Retighten fan fixing bolt ●Check reason and adjust ●Change fan
3. Compressor noise is large	A、Liquid hit produced when liquid refrigerant flows in compressor B、Components inside	●Check is expand value is ineffective, temp. sensor is loose, and repair ●Changer compressor

	compressor are damaged.	
4. Water pump doesn't operate or operate abnormally	A、Error on power or wiring B、Error on relay C、 There is gas in water pipe	●Check reason and repair ●Exchanger relay ●Exhaust all gas
5. Cooling effect is bad.	A、Freon in cooling system leaks B、Heat preservation of water pipe is bad. C、 Water flow quantity is not enough D、 Heavy dust on condenser E、Cooling system blocked	●Check and repair and recharge Freon. ●Strengthen heat preservation ●Clean water filter ●Clean condenser ●Check or change dry filter
6.Compressor frequently on and off.	A、Too much refrigerant B、Circulation of water system is bad. C、 Low load	●Exhaust some refrigerant ●Water system is blocked or there is air. Check water pump, valve, pipeline, clean water filter or exhaust air. ●Adjust load or increase energy store facility.
7. Refrigerate system low-pressure switch on/off is working frequently.	A、Freon leakage on system and refrigerant shortage. B、Dry filter is blocked C、 Error on heat expand valve. D、 Water system circulation is bad.	●Check and repair and recharge refrigerant. ●Change dry filter ●Check if expanse valve is blocked, temp. sensor is leaking, then repair or change. ●Check water system and solve.
8.Compressor operates but unit doesn't cool.	A、All refrigerant is leaked B、Freeze evaporator is freeze. C、 Compressor error	●Check, repair and charge refrigerant ●Check reason and remove freezing ●Change compressor

8. Terminal Facilities and Selection Guideline

Mini-chiller Terminal Facilities are mainly for the heat exchanger facilities installed indoor, Usually it is fan coil with several models. Such as horizontal invisible fan coil, horizontal visible fan coil, vertical visible fan coil, suspending fan coil and so on. User can select different type of fan coil according to house structure and indoor decoration style. Normally, we recommend selecting horizontal invisible fan coil, because it is in smaller dimension and can be concealed well, it is easy for indoor decoration. At the same time, its noise is lower, and it is relatively cheaper. Suggestions are as following:

Models	FP-34	FP-51	FP-68	FP-85	FP-102	FP-136
Room area m^2	8~12	10~18	15~25	20~30	25~35	30~45

Control to the fan coil at every room is conducted by the temperature control on wall and the 3-speed switch. Temperature control is for setting room temperature, 3-speed switch, with high, medium, and low speeds, for adjusting airflow and cooling capacity of the fan coil.

9. System Installation

Do have the unit installed by the authorized company or professional central air conditioning installation project company, don't try to install it by yourself.

1). Unit Installation

⑴. Select of installation location

★ This Household (Townhouse) unit can be installed on roof, ceiling, special flat or other place that is easy for installation and be able to stand its weight.

★ Select a place with well ventilation and smooth exhausting, and the place will not produce short-circuit circulation, and where exhausted air from the unit will not bother neighbors.

★ When placing the unit at roof, pay attention to wind direction to prevent direct up wind; when placing it on ground, avoid placing it at where there is strong wind.

★ There should be no heat source, exhaust vent of other facilities, strong steam and flammable gas around the unit.

★ When installing several units, ensure there is enough suction space to prevent short-circuit circulation.

★ Place where there is no large snow in winter.

★ There should be no obstruction near air intake vent or air outlet vent.

★ Place where with drainage pipe around the unit to drain cooling or heating water.

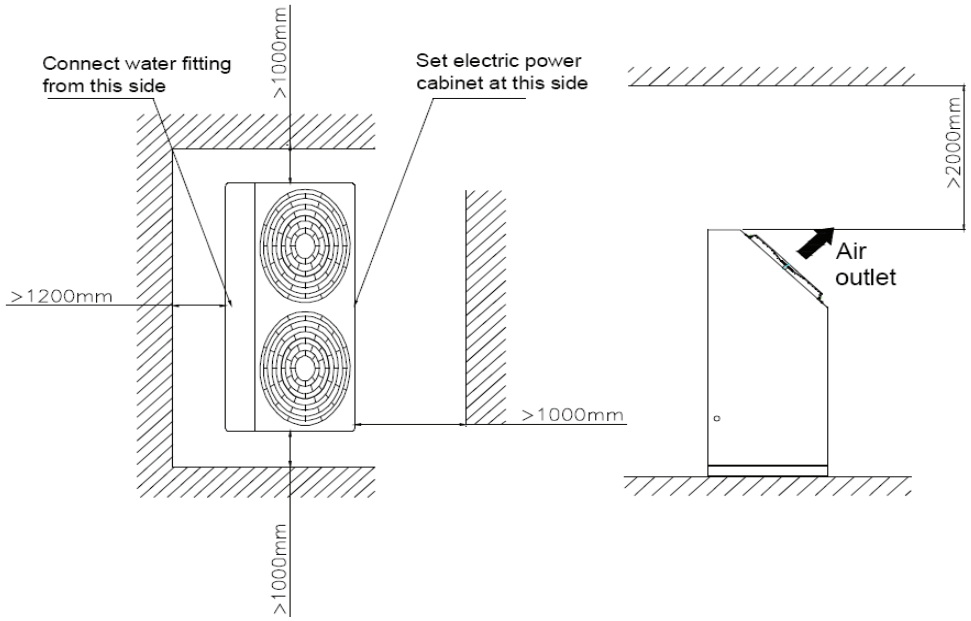
★ Place that near power for easy wiring.

★ Place that near supply water source for convenient pipe construction.

★ There should be open space around the unit.

⑵. Installation space requirement for outdoor unit

Whole installation:



Unit: mm

(3). Move and disassembly

★ It is better to use forklift or crane when moving the unit.

★ When suspending, please adopt canvas gallus, round the gallus at base of the unit and bundle it tightly, meanwhile, ensure that the gallus would not tough heat exchanger.

★ When moving the unit, the slant angle should be smaller than 30°

(4). Installation mode

★ Fix the unit on separated concrete base with expand bolts directly.

★ It is also available to adopt angle iron or steel supporter that make off channel steel, add shake-absorbing gaskets, and then place the unit on floor or roof. Ensure to keep the unit horizontally.

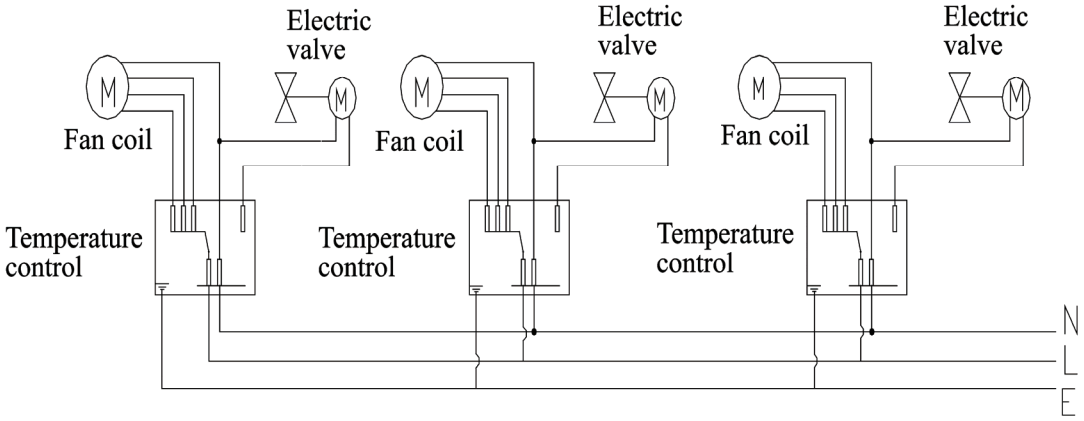
2). Installation of terminal facilities

Installation of indoor terminal fan coil should obey the installation regulation for air conditioning facilities.

★ Suspend the fan coil according to the elevation shown on air conditioning project construction chart, and please be aware to keep it horizontally.

★ Connect water in/out and water in/out joint of fan coil by soft joint; connect condensate water out pipe on water tray and condensate water drainage hose by plastic host.

★ Electric wiring of fan coil, 3-speed switch and temperature control are as following:



Electric wiring diagram for no connection control between fan coil and host

Special notice:

1、When connect control is not conducted between fan coil and host, please connect the end-switch at main board with live wire (short connected when outgoing).it shall be done by professional.

2、Method of shutting off the power is cutting off the air switch. Contact distance between the electrodes of the air switch must be beyond 3mm.

3、Installation should conform to the local electric standard.

4、The appliance shall be installed in accordance with national wiring regulations.

5、Before obtaining access to terminals, all supply circuits must be disconnected.

6、If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

7、An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

8、The appliance shall not be used by children without supervisor.

3). Water Pipe Connection

When connecting water pipe, please screw off the plug at water in pipe and water out pipe, connect the water-in hose and water-out hose separately with the water-in pipe and water-out pipe of the unit. Please note the following points when constructing:

★ Water connect pipes must be new, do not use old pipes instead of new ones.

★ Construction must be correctly designed and conducted according to the water and heat pipeline design criteria and standard.

★ Select corresponding pipe diameter according to the given dimension of pipes.

★ There is expand can set in the unit, water flow switch, auto water filling valve, safety valve, and water system adopts our Household (Townhouse) Unit standard installation sketch (as shown in the next page)

★ The proportion of electric 2-way valve and electric 3-way valve in water system should

refer to technical criteria (the recommended value is 2:1). And electric 3-way valve must be assembled at the furthest end of water system.

★ Try to decrease the pressure difference between indoor fan coil or main host with water in or out port of the unit.

★ Do install water filter at water-in pipe of the unit to prevent block at heat exchanger inside the unit.

★ After piping water system, according to relevant criteria for HVAC, conduct leakage test with hydraulic pressure of **0.6MPa.** and maintain the pressure for 24h. Ensure that there is no leakage in the whole pipeline system, then wrap heat preservation layer.

★ After completed piping of water system, do drain out contamination inside water system. Ensure that inside of water pipe is clean without contaminations such as rust dregs, so that there will be no blockage in pipeline and sleeve heat exchanger in the unit and water pump, which will damage the unit.

★ Exhaust air inside water system with auto exhaust valve. Auto exhaust valve must be installed at the highest point at water return pipe.

★ Drainage valve should be installed at the lowest point of water pipe.

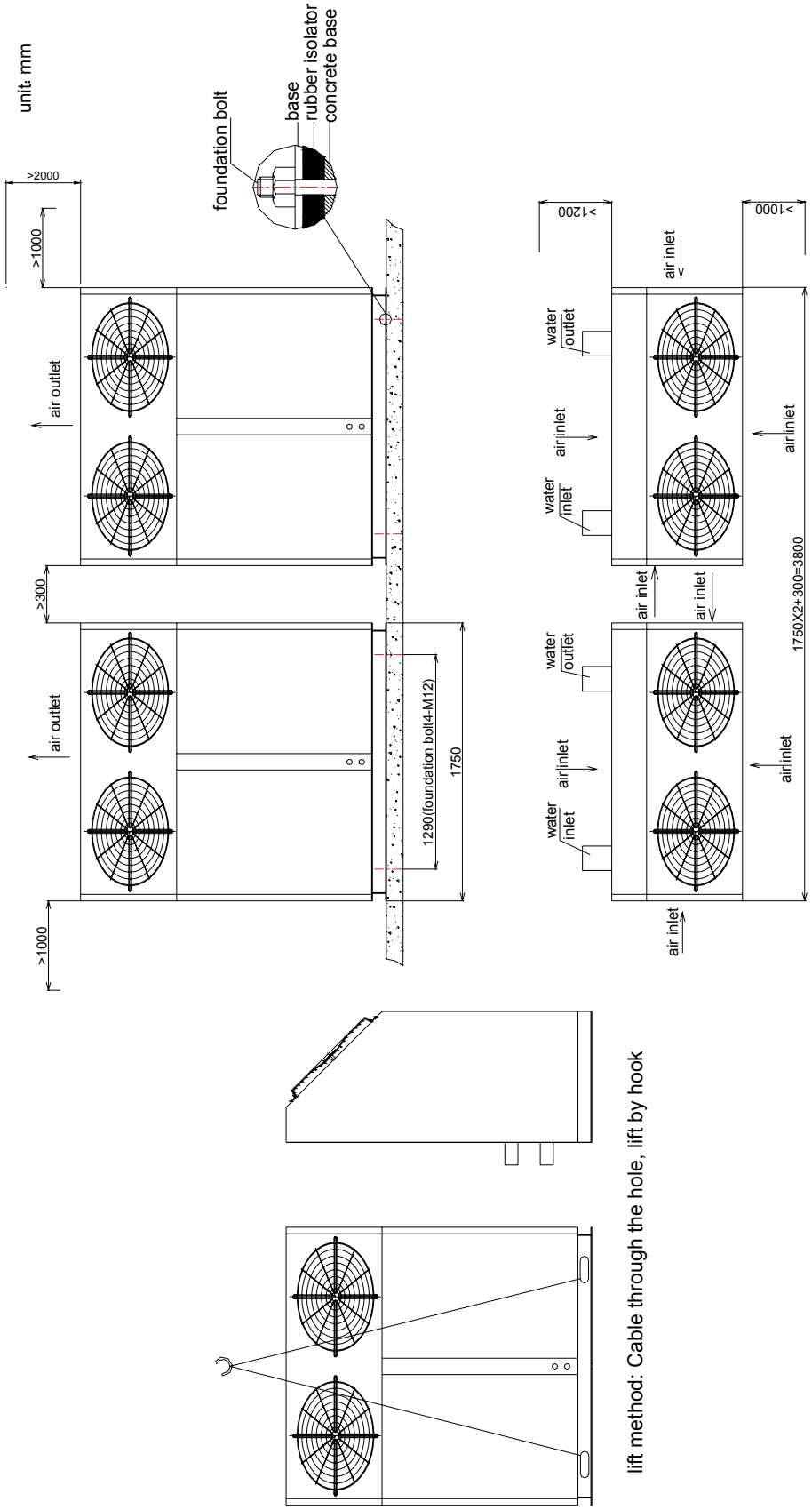
★ Thermometer and hydraulic pressure meter must be set at water-in and water-out pipe of unit for convenient check when unit is operating.

★ Water pipe must conduct heat preservation and moisture proof, to prevent loss of cooling or heating capacity and forming condensation water.

★ Inlet water pipe pressure must be lower than **0.62MPa.** ,otherwise safety valve will open automatically release pressure. At the same time ,its minimal pressure must be beyond **0.15MPa.**

★ Cleaning and maintenance must be done by professionals.

Warning: Water filter with at least 60 meshes must be installed on water-in pipeline system of the unit to avoid blocking the sleeve heat exchanger in the unit and causing damage. Do clean it regularly. It must be down by professionals



Standard Installation Sketch for this Household (Townhouse) Unit

4). Anti-frozen Notice

★ To heat pump unit, when it is used at where temperature in winter would below 0℃, do conduct heat preservation with insulation material, and add antifreeze according actual situation.

★ On control system there is auto antifreeze operation set for assisting system. Its principle is: When unit is at standby state (don't cut off power), and ambient temperature and system water temperature is at about 0 degree, control system will start water pump and compressor till water temperature reaches safety point.

Thickness of glycol liquid—freezing point list:

Thickness %	Freezing point ℃	Thickness %	Freezing point ℃	Thickness %	Freezing point ℃
4.6	-2	19.8	-10	35	-21
8.4	-4	23.6	-13	38.8	-26
12.2	-5	27.4	-15	42.6	-29
16	-7	31.2	-17	46.4	-33

In the list: Thickness of glycol is mass thickness.

10. System Adjustment (it shall be done by professional)

1). discharge water to water system

★ Fill water to the water pipe, meanwhile, conduct auto gas exhaust from exhaust valve till the whole pipe filled with water, and confirm air in pipe had completely be exhausted.

2). Check Before Trial Run

Checking must be done by professional personnel.

★ **Check indoor fan coil**

- ✧ Check if power cord connection of all indoor fan coils is correct, and rotation direction of fan motor is correct.
- ✧ Check if the valve on entrance and exit pipes of fan coil is completely open.
- ✧ Exhaust it from exhaust valve when there is gas inside fan coil.

★ **Check unit**

- ✧ Check if the outer appearance of unit and pipeline system is damaged during transportation.
- ✧ Check if wiring terminals for electric components inside unit is loose, if phase sequence is correct.
- ✧ Check if vane of fan motor would touch the outer case and grille when rotating.
- ✧ Check if temperature sensor had inserted well.

★ **Check pipeline system**

- ✧ Check if valves at pipeline system had open completely.
- ✧ Check if water had filled the whole pipeline system, if air is exhausted completely.
- ✧ Check if heat preservation to pipeline system is well.

3).Trial Run

Trial run can only be conducted after passing all above checking, then do it under the guideline of professional personnel.

★ Switch on the power supply and turn on the unit. To the unit that uses 3-phase power, when power sequence is reverse, phase sequence protection works, then fan motor, compressor and water pump will not operate At that time, cut off power first, exchange the two phases among the 3-phase power, then switch on the power supply again and turn on the unit.

★ During operation, circle water pump should operates steadily. If it operates unsteadily, and indicator of pressure meter swings a lot, it means there is air inside water system. At that time, exhaust air completely through exhaust valve and then turn on the unit. After turning on the unit for 3 minutes, fan and compressor start automatically.

★ After compressor had started, when abnormal sound is heard, stop the unit immediately and check.

★ When cooling in summer, when temperature of water-out Tout≥15℃, compressor starts; when Tout≤7℃, compressor stops, and water pump keeps on running.

★ To heat pump unit, when it is operating heating in winter, and if water-out temperature Tout≤45℃, compressor starts running; when Tout≥50℃, compressor stops, and water pump continues running.

★ Obverse if water temperature for in and out is normal, when the temperature difference between water in and out ΔT>5℃, it means water flow in the system is small, at this time, check that whether there is blockage in water filter, air in the pipe had not been exhausted, resistance in pipeline system is too great etc. when ΔT is between 3-5℃, it can achieve best performance.

★ After trial run, clean the filter on pipeline first, and then the unit can begin normal operation. It is necessary to assembly and cleans the filter after a certain period (say, 3 months) to remain normal operation.

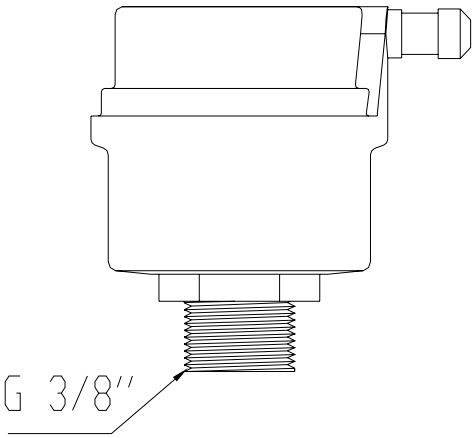
Note: Since the unit adopts total hermetic scroll compressor, phase sequence of power must be correct, and it is forbidden for operate with reverse power supply for long time.

11. Usage Instruction for Accessories (all the operation shall be done by professional)

1. Auto exhaust valve

If air in water system is not exhausted, it would cause effects:

- ✧ Temperature at some parts will be uneven
- ✧ Noise is produced
- ✧ Oxygen contain in the air would cause metal oxygenation
- ✧ Too much air would damage water pump



Auto exhaust valve should be installed at the top of pipeline, the place that gas is easily gathered, and it should be installed vertically; self-close valve or cut-off valve should be installed at bottom of exhaust valve, it is convenient for system water fill or is used when repairing; exhaust valve cannot be installed at place that is easy to be frozen.